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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,718

09/05/2006

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EXAMINER

JOHNSON, CONNIE P

ART UNIT

PAPER NUMBER

1722

MAIL DATE

DELIVERY MODE

04/26/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,718	Applicant(s) ISHIDUKA ET AL.
	Examiner CONNIE P. JOHNSON	Art Unit 1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,7-14 and 18-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,7-14 and 18-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/1/2010 has been entered.

Response to Amendment

2. The remarks and amendment filed 4/1/2010 has been entered and fully considered.
3. Claims 1, 7-14 and 18-24 are presented.
4. Claims 1 and 14 are amended.
5. Claim 2-6 and 15-17 are cancelled per applicants' request.
6. The Notice of Reasons for Rejection for Japanese application 2004-170424 is not considered because no English translation is provided.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 1, 7-12, 14 and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazawa et al., JP2003-040840 A (English Translation attached).

Miyazawa teaches a positive resist composition comprising a resin increasing alkali-solubility by action of an acid and an acid generator.

With regards to claim 1, Miyazawa teaches the resin (A) comprises recurring units of formula (7) [reference paragraph 0053], which are representative of constitutional unit (a1) in present claim 1, when X is a divalent aliphatic cyclic group (cyclohexyl), Y is a divalent methylene group, $m=1$, R^2 = a hydrogen atom and $n=1$.

With regards to constitutional unit (a2) in present claim 1, Miyazawa teaches other methacrylic acid ester monomer units other than formulas (1)-(7), including adamantyl methacrylate or cyclohexyl methacrylate [paragraph 0026].

With regards to constitutional unit (a3) in present claim 1, Miyazawa teaches formula (1), paragraph [0010-0012], wherein R_1 is a hydrocarbon, R_2 is a cyclohexane group (paragraph 0012), R_3 = hydrogen or cyclic alkyl (paragraph 0011) and $n=2$ as previously taught in reference claim 1. Miyazawa does not specifically teach the monomer units in amounts of 20-80mol%. However, Miyazawa does teach that each monomer unit is present in an amount of 30-100%. Therefore, the mol% of each monomer unit is a result effective variable. "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)" See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (MPEP 2144.05). Therefore, it would have been obvious to one of ordinary skill in the

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art to optimize the methacrylic and acrylic acid ester monomer units in amounts of 20-80mol% to form a resist with improved transparency.

With regards to claim 7, the cyclohexyl group is an aliphatic cyclic group.

With regards to claims 8 and 9, the monomer unit that is representative of constitutional unit (a1) may comprise formula (1), wherein the R2 group is substituted as a norbornene group, which is the polycyclic group as claimed (paragraph 0012).

With regards to claims 10 and 11, formula (1) may be substituted with an adamantyl group as R2 and is representative of (a2) in claims 10 and 11 paragraph [0012].

With regards to claim 12, applicant does not claim a liquid immersion lithography process. Therefore, the limitation in claim 12, "wherein a medium for liquid immersion lithography is water" does not add patentable weight to the claim.

The combination of recurring units (a1), (a2) and (a3) is not exemplified in the reference. However, it would have been obvious to one of ordinary skill in the art to combine the recurring units because Miyazawa teaches any combination of the formulas (1)-(7) and additional monomer units are suitable to form the acid dissociable, dissolution inhibiting resin for the resist composition.

9. Claims 1, 13, 14, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazawa et al., JP2003-040840 A in view of Endo et al., U.S. Patent Publication No. 2004/0259040 A1.

10. Miyazawa teaches a positive resist composition comprising a resin increasing alkali-solubility by action of an acid and an acid generator as relied upon above.

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Miyazawa teaches a method of forming a resist pattern. However, Miyazawa does not teach a method of forming the resist pattern by immersion lithography.

Additionally, Endo teaches an immersion exposure method comprising supplying water as the immersion liquid onto a resist film, exposing through the immersion liquid, baking and developing the resist film (page 58, [0058-0059]). It would have been obvious to one of ordinary skill in the art to use immersion exposure in the composition of Miyazawa because immersion exposure is well known to improve resolution and refine patterns at conventional exposure wavelengths (page 1, [0003-0004]).

Response to Arguments

Applicant's arguments filed 4/1/2010, with respect to the rejection(s) of claim(s) 1, 4-12 and 15-23 under 103(a) and claims 13, 14 and 24 under 103(a) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, new ground(s) of rejection are made herein.

11. Applicant argues that Endo is merely cited for its disclosure of an immersion exposure method and fails to cure the deficiencies of Kanna in this regard.

The Kanna reference has been withdrawn from the rejection. Therefore, the arguments over Kanna are moot. Additionally, Endo is cited in combination with the Miyazawa reference to show forming a resist pattern by immersion lithography.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Connie P. Johnson/
Examiner, Art Unit 1722

/Shean C Wu/
Primary Examiner, Art Unit 1722